ABSTRACT OF THE DISCLOSURE

A microcontroller in a fuel cell system performs at least a portion of a self-test of general registers while the system is in a starting state, and at least a portion of a self-test while in a running state. The self-test includes setting the general purpose registers to a first bit pattern, complementing the bits of one of the general registers, copying the complemented general register to a special register, determining if each bit in special register was complemented, and producing a notification. The microcontroller also verifies that the other general registers are not affected. The microcontroller again complements the previously complemented general purpose register, copies the complemented general register to the special register, determines if the special register matches the predefined pattern, and produces a notification. The microcontroller again verifies that the other general purpose registers were not affected. The process is repeated for the complement of the first bit pattern, and for each general register.

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